

# Work Order ID 130092

Monday, February 23, 2015 10:52:28 AM

\*130092\*

U/R

Page 1

Item ID: D412-664-403

Accept

\*N9000040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan:

MLJ

Date: 15-02-23 Tooling:

Date:

Run Start \*NR1\*

QC:

Date: SPC (Y/N):

Date:

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description                                                            | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp  |
|--------------------------------|-------------------------------------------------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|-----------------|
| Draw Nbr                       | Revision Nbr                                                                        |                      |         |        |              |               |               |                  |                 |
| D412-664-443                   | A U/R OK QP 15/2/23                                                                 |                      |         |        |              |               |               |                  | MLJ JUN 22 2015 |
| 100                            | Document Control                                                                    | 0.00                 |         |        |              |               |               |                  |                 |
| *100*                          | DOCUMENT CONTROL                                                                    |                      |         |        |              |               |               |                  |                 |
| DC                             | Memo                                                                                | 0.00                 |         |        |              |               |               |                  |                 |
| Doc.Control -USB or Paperwork  | Photocopy bluefile & type labels per PPPD412-664-403                                |                      |         |        |              |               |               |                  |                 |
| 110                            |                                                                                     | 0.00                 |         |        |              |               |               |                  |                 |
| *110*                          | BENDING MACHINE - CROSSTUBES                                                        |                      |         |        |              |               |               |                  |                 |
| CNC Bend 2                     | Memo                                                                                | 0.00                 |         |        |              |               |               |                  |                 |
| CNC Alpha 160 Bender           | Bend tube as per Dwg D412-664-443 using CNC bender program _____ and Folio FT _____ |                      |         |        |              |               |               |                  |                 |
|                                | ****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****                              |                      |         |        |              |               |               |                  |                 |
| 127                            | QC15- Crosstube Dimensional Check                                                   | 0.00                 |         |        |              |               |               |                  |                 |
| *127*                          |                                                                                     |                      |         |        |              |               |               |                  |                 |
| QC                             | Memo                                                                                | 0.00                 |         |        |              |               |               |                  |                 |
| Quality Control                | ***MARK CUT LINES***                                                                |                      |         |        |              |               |               |                  |                 |

DAS  
26  
9-89

IX

JUN 22 2015

W

15-06-04

①

2B  
15-06-04

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge<br><br><input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><br><input type="checkbox"/> Other |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Work Order ID 130092

\*130092\*

Page 2

Monday, February 23, 2015 10:52:28 AM

Item ID: D412-664-403

Accept

\*N9000040100\*

Setup Start

\*NS1\*

Revision ID:

Stop

\*NS2\*

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Run Start

\*NR1\*

Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop

\*NR2\*

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

128

0.00

\*128\*

Crosstubes

Crosstubes

Memo

0.00

CUT TUBE AT HEIGHT ON FAI SHEET

VERF HEIGHT 24.400 BY QC 15 LEVEL INSPECTOR

VERF TWIST 0.176 BY QC 15 LEVEL INSPECTOR

DAS  
38  
9-89

DAS  
38  
9-89

JUN 04 2015

130

0.00

\*130\*

Crosstubes

Crosstubes

Crosstubes

Memo

0.00

1- Drill Tube as per Dwg D412-664-443 Using DT \_\_\_\_\_ Drill Jigs.

Set-up drill table as per QSI 010

2-Deburr

3- Engrave Part # and Batch # as per Dwg D412-664-443

4-Remove all marks from tube within limits of D412-664-43 DWG.

TW

15-06-05

BL

15/06/05

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
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| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
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### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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# Work Order ID 130092

\*130092\*

Page 3

Monday, February 23, 2015 10:52:28 AM

Item ID: D412-664-403

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

140

QC- Inspect dimensions to drawing

0.00

\*140\*

QC

Memo

0.00

Quality Control

EB  
13-06-05

174

Outsource process - NDT per QSI038 4.1

0.00

\*174\*

Outsource2

Memo

0.00

Outsource process - NDT

ISSUE P/O TO ACCUREN: 28743

CY JUN 10 2015

176

Receive & Inspect for Damage & Mat'l Certs

0.00

\*176\*

Packaging

Memo

0.00

Packaging

IX SPS-0010

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
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| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
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| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

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| Material      |      |      |     |                                                     |                   |                    |             |              |              |
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| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other                                                                                                                                                                                                                                                          |

# Work Order ID 130092

\*130092\*

Page 4

Item ID: D412-664-403

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Run Start \*NR1\*

Approvals: Process Plan: Date: Tooling: Date:

Stop \*NR2\*

QC: Date: SPC (Y/N): Date:

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

|     |                                               |      |  |  |  |  |  |  |  |
|-----|-----------------------------------------------|------|--|--|--|--|--|--|--|
| 178 | QC5- Inspect part completeness to step on W/O | 0.00 |  |  |  |  |  |  |  |
|-----|-----------------------------------------------|------|--|--|--|--|--|--|--|

\*178\*

QC Memo 0.00

Quality Control

EO 15-06-12 DAS 9 9-89 05

|     |            |      |  |  |  |  |  |  |  |
|-----|------------|------|--|--|--|--|--|--|--|
| 180 | SprayPaint | 0.00 |  |  |  |  |  |  |  |
|-----|------------|------|--|--|--|--|--|--|--|

\*180\*

SprayPaint Memo 0.00

Spray Painting

1-Prime inside & outside crosstube as per QSI 005 4.2

BATCH: 131846

2- MASK UNDERSIDE OF CROSSTUBE AS SHOWN ON DWG BEFORE PAINTING

3 -Paint Outside of Tube as per Dart QSI 005 4.2

BATCH: 132422

4- After painting remove masking and apply matte clear coat per QSI005 4.2

CLEAR BATCH: 131485

★  
SEE  
OVER

DAS  
41  
9-89  
15-6-18

DQA:

Date:

15/06/30



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date:

15/06/03

Work Order update only ☐

|                              |                                                                                                                                                                                           |                                        |                                    |                                              |                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|-------------------------------------------------|
| Work Order: <u>130092</u>    | <b>DISPOSITION</b><br>Rework <input checked="" type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b>      |                                    |                                              |                                                 |
| Part No. <u>D412-664-403</u> |                                                                                                                                                                                           | Skid-tube <input type="checkbox"/>     | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/>           | Engineering <input checked="" type="checkbox"/> |
| NCR No. <u>15-5127</u>       |                                                                                                                                                                                           | Machining <input type="checkbox"/>     | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/>   | Quality <input type="checkbox"/>                |
|                              |                                                                                                                                                                                           | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/>                  |
|                              |                                                                                                                                                                                           | Large Fab <input type="checkbox"/>     | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/>            |                                                 |

| Root Cause                                 | Date   | Step | Qty | Description of work order update or non-conformance    | Initial Chief Eng | Action Description                 | Sign & Date     | Verification      | QC Inspector      |
|--------------------------------------------|--------|------|-----|--------------------------------------------------------|-------------------|------------------------------------|-----------------|-------------------|-------------------|
| Design <input checked="" type="checkbox"/> | 15/6/9 | 180  | 1   | PRIMING I.D. may be difficult and may peel in service. |                   | Acceptable to leave I.D. unprimed. | DAS 9-89 15/6/9 | DAS 9-89 15-06-22 | DAS 9-89 15-06-22 |
| Doc/Data <input type="checkbox"/>          |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Equip/Tooling <input type="checkbox"/>     |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Handling/Pre <input type="checkbox"/>      |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Material <input type="checkbox"/>          |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Operator <input type="checkbox"/>          |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Offset/Setup <input type="checkbox"/>      |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Process <input type="checkbox"/>           |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Supplier <input type="checkbox"/>          |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Training <input type="checkbox"/>          |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Transport <input type="checkbox"/>         |        |      |     |                                                        |                   |                                    |                 |                   |                   |
| Unapproved <input type="checkbox"/>        |        |      |     |                                                        |                   |                                    |                 |                   |                   |

## FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                            |
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| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input checked="" type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**Work Order ID 130092****\*130092\***

Page 5

Item ID: D412-664-403

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start **\*NR1\***

QC: Date: SPC (Y/N): Date:

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description  | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|---------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 190                            | QC14- Inspect Spray Paint | 0.00                 |         |        |              |               |               |                  |                |
| <b>*190*</b>                   |                           |                      |         |        |              |               |               |                  |                |
| QC                             | Memo                      | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                |                           |                      |         |        |              |               |               |                  |                |

① 15:06-22

DAS  
9  
9-89

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence |
| <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Work Order ID 130092****\*130092\***

Page 6

Item ID: D412-664-403

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

200

0.00

**\*200\***

Crosstubes

0.00

Crosstubes

Memo

Crosstubes

1- Install center support using scoth-weld DP460 per QSI 015, as per DWG. note  
12. Install supports clamps using as per Dwg D412-644-443. Install clamp with  
rubber cushion as per DWG. note 13. \*\*\*ENSURE CLAMPS ARE ON TOP OF  
CROSSTUBE SUPPORT\*\*\* Torque clamps on support to 80-100 IN-LBS AS  
PER DWG.

A/R scoth-weld DP460

BATCH #: 131539  
EXP DATE: 2/16

2- \*\*IF NOT ALREADY PRESENT ON CHAFFING SHEILD.\*\* Apply a thin  
coat of proseal 890 per QSI 015 on inside concave surface of chafing shield and  
let cure per manufacturer's instructions. Install prosealed chafing shield onto  
crosstube by applying a thin coat of proseal 890 onto crosstube. Be sure to  
eliminate any air gaps. Install and torque clamps on chafing shield to 40-50 IN-  
LBS AS PER DWG.

A/R Proseal 890

Batch: 132226  
EXP DATE: 12/15

AFTER FINISH CURE TIME 24H

START CURE TIME: 15-6-19FINISH CURE TIME: 15-6-20

PRIOR TO PACKAGING RE-CHECK TORQUE ON CLAMPS AFTER  
CURED FOR 24H.

DAS

41

9-89

15-6-19

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other                                                                                                                                                                                                                                                          |

**Work Order ID 130092****\*130092\***

Page 7

Item ID: D412-664-403

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00

**\*210\***

QC

Memo

0.00

Quality Control

PRIOR TO PACKAGING RE-CHECK TORQUE ON CLAMPS AFTER  
CURED FOR 24H.

① 1506-22

DAS  
9  
9-89

220

Pick Kit

0.00

**\*220\***

Packaging

Memo

0.00

Packaging

DAS  
27  
9-89

JUN 22 2015

230

QC4- 100% Inspect kits for completeness

0.00

**\*230\***

QC

Memo

0.00

Quality Control

DAS  
26  
9-89

1X SP15-06-22

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge<br><br><input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><br><input type="checkbox"/> Other |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Work Order ID 130092****\*130092\***

Page 8

Item ID: D412-664-403

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 2/23/2015 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start **\*NR1\***

QC: Date: SPC (Y/N): Date:

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

240

0.00

**\*240\***

Packaging

DAS

02

9-89

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD412-664-443

Location: Sold  
PPP Rev: \_\_\_\_\_

150622

250

QC21- Final Inspection - Work Order Release

0.00

**\*250\***

QC

Memo

0.00

Quality Control

JUN 27 2013

MUS

MF  
15-6-20

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other                                                                                                                                                                                                                                                          |



# Picklist Print

Monday, February 23, 2015 10:52:33 AM

Page 1

3

Work Order ID: 130092

\*130092\*

Parent Item: D412-664-403

\*D412-664-403\*

Parent Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015

Required Date: 2/23/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.10.25 NEW ISSUE DD VERF:JLM

| Component Item ID/<br>Item Name                                                                                                                                                                                                                                                                                                                                  | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued    | Status |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|-------------------|--------|----------|---------|----------|--------|-----|--|----------------|----|--|----------------|----|--|---------|----|--|----------------|----|--|
| AN6-40A<br><b>*AN6-40A*</b><br>Bolt                                                                                                                                                                                                                                                                                                                              |                        | Purchased     | No          |                     |                  |                 | Each               | 122.0000       | **          | 4            |               | DAS<br>27<br>9-89 |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| <div><div>DAS<br/>26<br/>9-89</div><table><tr><th>Location</th><th>Loc Qty</th><th>Loc Code</th></tr><tr><td>ST286A</td><td>100</td><td></td></tr><tr><td><u>M129521</u></td><td>50</td><td></td></tr><tr><td><u>M131618</u></td><td>50</td><td></td></tr><tr><td>ST333</td><td>22</td><td></td></tr><tr><td>M130466</td><td>22</td><td></td></tr></table></div> |                        |               |             |                     |                  |                 |                    |                |             |              |               |                   |        | Location | Loc Qty | Loc Code | ST286A | 100 |  | <u>M129521</u> | 50 |  | <u>M131618</u> | 50 |  | ST333   | 22 |  | M130466        | 22 |  |
| Location                                                                                                                                                                                                                                                                                                                                                         | Loc Qty                | Loc Code      |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| ST286A                                                                                                                                                                                                                                                                                                                                                           | 100                    |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| <u>M129521</u>                                                                                                                                                                                                                                                                                                                                                   | 50                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| <u>M131618</u>                                                                                                                                                                                                                                                                                                                                                   | 50                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| ST333                                                                                                                                                                                                                                                                                                                                                            | 22                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| M130466                                                                                                                                                                                                                                                                                                                                                          | 22                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| AN6-41A<br><b>*AN6-41A*</b><br>Bolt                                                                                                                                                                                                                                                                                                                              |                        | Purchased     | No          |                     |                  |                 | Each               | 63.0000        | **          | 2            |               | DAS<br>27<br>9-89 |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| <div><div>DAS<br/>26<br/>9-89</div><table><tr><th>Location</th><th>Loc Qty</th><th>Loc Code</th></tr><tr><td>ST286A</td><td>30</td><td></td></tr><tr><td><u>M129913</u></td><td>30</td><td></td></tr><tr><td>ST333</td><td>33</td><td></td></tr><tr><td>M129934</td><td>13</td><td></td></tr><tr><td><u>M131618</u></td><td>20</td><td></td></tr></table></div>  |                        |               |             |                     |                  |                 |                    |                |             |              |               |                   |        | Location | Loc Qty | Loc Code | ST286A | 30  |  | <u>M129913</u> | 30 |  | ST333          | 33 |  | M129934 | 13 |  | <u>M131618</u> | 20 |  |
| Location                                                                                                                                                                                                                                                                                                                                                         | Loc Qty                | Loc Code      |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| ST286A                                                                                                                                                                                                                                                                                                                                                           | 30                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| <u>M129913</u>                                                                                                                                                                                                                                                                                                                                                   | 30                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| ST333                                                                                                                                                                                                                                                                                                                                                            | 33                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| M129934                                                                                                                                                                                                                                                                                                                                                          | 13                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| <u>M131618</u>                                                                                                                                                                                                                                                                                                                                                   | 20                     |               |             |                     |                  |                 |                    |                |             |              |               |                   |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |
| AN960JD616<br><b>*AN960JD616*</b><br>Washer                                                                                                                                                                                                                                                                                                                      | NAS1149D0663J          | Purchased     | No          |                     |                  |                 | Each               | 0.0000         | **          | 18           |               | DAS<br>27<br>9-89 |        |          |         |          |        |     |  |                |    |  |                |    |  |         |    |  |                |    |  |

m131618

JUN 22 2015

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width:100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge<br><br><input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><br><input type="checkbox"/> Other |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Picklist Print

Monday, February 23, 2015 10:52:33 AM

Page 2

Work Order ID: 130092

**\*130092\***

Parent Item: D412-664-403

**\*D412-664-403\***

Parent Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 2/23/2015

Required Date: 2/23/2015

Start Qty: 1.00

Required Qty: 1.00

D3595-063-530

Manufactured No

Each

115.0000

2

DAS

**\*D3595-063-530\***

\*\*

41

Rubber Cushion

9-89 15-6-19

## Location

## Loc Qty

## Loc Code

FG

5

82656

5

LG051

110

115704

99

117571

11

Each

0.0000

1

\*\*

D412-664-443TRN

Manufactured No

**\*D412-664-443TRN\***

Crosstube Turning Detail

D4909-1

Manufactured No

Each

10.0000

1

\*\*

**\*D4909-1\***

Support

## Location

## Loc Qty

## Loc Code

LG053

10

120359

6

121062

4

Each

12.0000

2

\*\*

D4910-1

Manufactured No

**\*D4910-1\***

Chaffing Shield

## Location

## Loc Qty

## Loc Code

LG053

7

120253

4

121993

3

LG054

5

127443

5

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other                                                                                                                                                                                                                                                          |

# Picklist Print

Monday, February 23, 2015 10:52:33 AM

Page 3

Work Order ID: 130092

Parent Item: D412-664-403

Parent Item Name: 412 Stainless Steel Aft Crosstubes - High

\*130092\*

\*D412-664-403\*

Start Date: 2/23/2015

Required Date: 2/23/2015

Start Qty: 1.00

Required Qty: 1.00

MS21042L6

Purchased

No

Each

516.0000

6

\*MS21042L6\*

Nut

\*\*

DAS  
27  
9-89



JUN 22 2015

## Location

## Loc Qty

## Loc Code

ST273A

200

m131624

200

ST304

212

m129499

12

m131317

200

ST305

104

m129909

8

m130799

96

MS21920-26

Purchased

No

Each

42.0000

4

\*MS21920-26\*

Clamp

\*\*

DAS  
41  
9-89

15-6-19

## Location

## Loc Qty

## Loc Code

LG050

42

107974

1

109206

41

MS21920-28

Purchased

No

Each

83.0000

2

\*MS21920-28\*

Clamp

\*\*

DAS  
41  
9-89

15-6-19

## Location

## Loc Qty

## Loc Code

FG

1

105884

1

LG050

82

M130400

50

M130665

2

M131367

30

131651

2

Monday, February 23, 2015 10:52:33 AM

Shop Packet Print

Page 3

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>                                                                                                                                                 | Water Jet <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering <input type="checkbox"/> |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>                                                                                                                                                 | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quality <input type="checkbox"/>     |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>                                                                                                                                                 | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Other <input type="checkbox"/>       |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>                                                                                                                                                 | Supplier <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                    |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

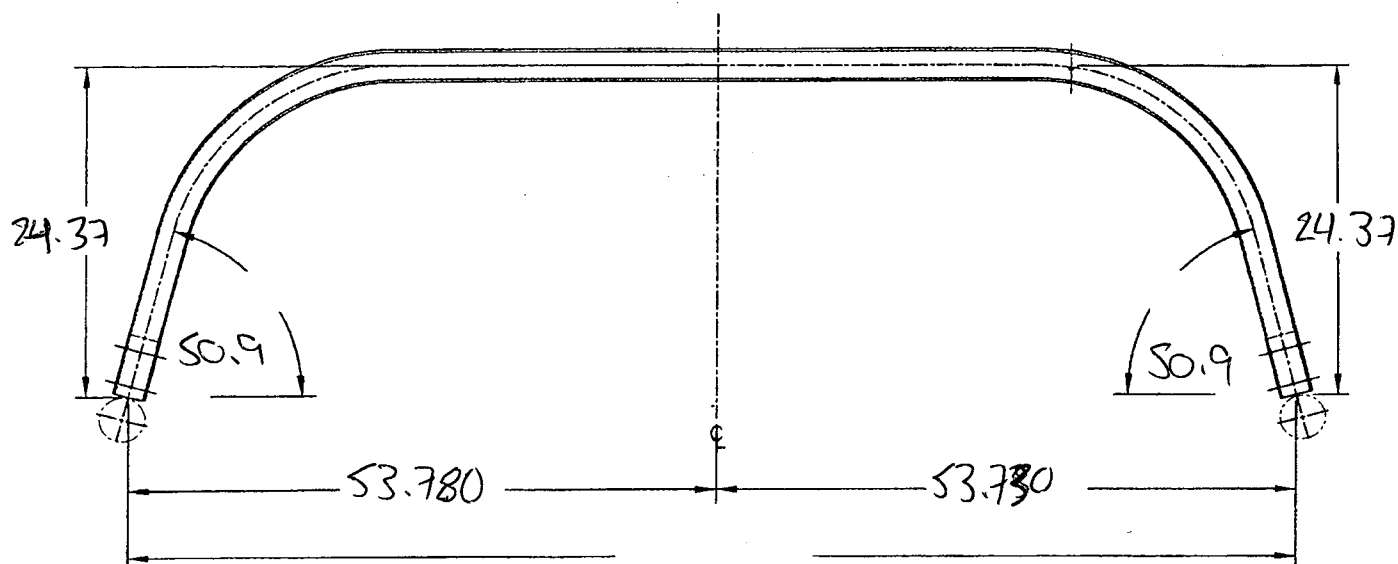
| Root Cause    | Date | Step | Qty | Description of work order update or non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|---------------|------|------|-----|-----------------------------------------------------|-------------------|--------------------|-------------|--------------|--------------|
| Design        |      |      |     |                                                     |                   |                    |             |              |              |
| Doc/Data      |      |      |     |                                                     |                   |                    |             |              |              |
| Equip/Tooling |      |      |     |                                                     |                   |                    |             |              |              |
| Handling/Pre  |      |      |     |                                                     |                   |                    |             |              |              |
| Material      |      |      |     |                                                     |                   |                    |             |              |              |
| Operator      |      |      |     |                                                     |                   |                    |             |              |              |
| Offset/Setup  |      |      |     |                                                     |                   |                    |             |              |              |
| Process       |      |      |     |                                                     |                   |                    |             |              |              |
| Supplier      |      |      |     |                                                     |                   |                    |             |              |              |
| Training      |      |      |     |                                                     |                   |                    |             |              |              |
| Transport     |      |      |     |                                                     |                   |                    |             |              |              |
| Unapproved    |      |      |     |                                                     |                   |                    |             |              |              |

### FAULT CATEGORY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending<br><input type="checkbox"/> Centre Not Concentric<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crimp/Kink/Ripple/Wave<br><input type="checkbox"/> Cuffs<br><input type="checkbox"/> Crushing<br><input type="checkbox"/> Heat Treat<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Marks/Chatter<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>General</b><br><input type="checkbox"/> Bend<br><input type="checkbox"/> BOM/Route<br><input type="checkbox"/> Broken/Damage/Defect<br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Countersink<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Drawing<br><input type="checkbox"/> Drill Holes<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Fit/Function | <input type="checkbox"/> Folio/Program<br><input type="checkbox"/> Grain<br><input type="checkbox"/> Hardware<br><input type="checkbox"/> Inspection Incomplete/Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Misaligned/off center<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Misread<br><input type="checkbox"/> Off-set<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Incorrect<br><input type="checkbox"/> Part Lost/Missing<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Power Loss/Surge                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> Pressure/Forced<br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other                                                                                                                                                                                                                                                          |

|                                              |  |                     |                    |
|----------------------------------------------|--|---------------------|--------------------|
| <b>DART AEROSPACE LTD</b>                    |  | <b>Work Order:</b>  | 130092             |
| <b>Description:</b> Crosstube High Aft (412) |  | <b>Part Number:</b> | D412-664-403       |
| <b>Inspection Dwg:</b> D412-664-443          |  | <b>Rev:</b> A       | <b>Page 1 of 1</b> |

| Required Dimension | Min    | Max    |
|--------------------|--------|--------|
| Height             | 24.12  | 24.62  |
| 1/2 Span           | 53.56  | 53.82  |
| Angle              | 49°    | 52°    |
| Total Span         | 107.12 | 107.64 |
| Bending Passes     | 8      | --     |
| Crushing           | --     | 7%     |



|                | Side A | Side B |
|----------------|--------|--------|
| Bending Passes | 15     | 15     |
| Crushing       | 5.6%   | 6.1%   |
| Comments       |        |        |
|                |        |        |
|                |        |        |
|                |        |        |

|                 |          |
|-----------------|----------|
| QC15 Inspection | QB       |
| Date            | 15-06-04 |

| Rev | Date     | Change    | Revised by | Approved |
|-----|----------|-----------|------------|----------|
| A   | 14.07.08 | New Issue | KJ         | UP       |

| Item | Qty<br>-443 | Part Number       | Description                           |
|------|-------------|-------------------|---------------------------------------|
| 1    | X           | D412-664-443      | CROSSTUBE ASSEMBLY (412 HI AFT)       |
| 2    | 1           | D6020-132         | CROSSTUBE MATERIAL (132" MIN. LENGTH) |
| 3    | 2           | D3595-063-530     | RUBBER CUSHION                        |
| 4    | 1           | D4909-1           | SUPPORT                               |
| 5    | 2           | D4910-1           | CHAFING SHIELD                        |
| 7    | 4           | MS21920-26        | CLAMP                                 |
| 8    | 2           | MS21920-28        | CLAMP                                 |
| 9    | A/R         | SCOTCH-WELD DP460 | EPOXY ADHESIVE, 3M SCOTCH-WELD        |
| 10   | A/R         | PROSEAL 890       | SEALANT                               |

#### GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6020-132  
FINISHED LENGTH = 130.10±0.060 (BEFORE BENDING/TRIMMING)
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (ZN C6-2, HATCHED AREA)  
PAINT OUTSIDE PER DART QSI 005 4.2  
AFTER PAINTING, REMOVE MASKING AND APPLY MATTE CLEAR COAT PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART P/N "D412-664-443" AND B/N ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 90.2 lb AFTER MACHINING  
86.7 lb FINISHED WEIGHT
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

#### BENDING

- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7% (BASED ON O.D.) IN LOWER HALF OF R35 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038. TO BE PERFORMED AFTER FINAL POST-BEND GRINDING. ANY ADDITIONAL GRINDING REQUIRES ANOTHER LPI INSPECTION.

#### ASSEMBLY

- 12) INSTALL D4909-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015.
- 13) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D4909-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP OF CROSSTUBE SUPPORT.
- 14) IF NOT ALREADY PRESENT ON CHAFING SHIELD, APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D4910-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D4910-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.
- 15) TORQUE CLAMPS ON D4909-1 SUPPORT 80 TO 100 IN-LB. TORQUE CLAMPS ON D4910-1 CHAFING SHIELD 40 TO 50 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVES HAVE CURED FOR 24 HOURS.

130092 MJS  
1502-23

UNDER REVIEW  
11/1/01  
RELEASED  
2014-05-26

|            |             |    |          |
|------------|-------------|----|----------|
| A          | NEW ISSUE   | CP | 14.04.01 |
| REV.       | DESCRIPTION | BY | DATE     |
| DESIGN     |             |    |          |
| DRAWN      |             |    |          |
| CHECKED    |             |    |          |
| MFG. APPR. |             |    |          |
| APPROVED   |             |    |          |
| DE APPR.   |             |    |          |
| DATE       | 14.04.01    |    |          |

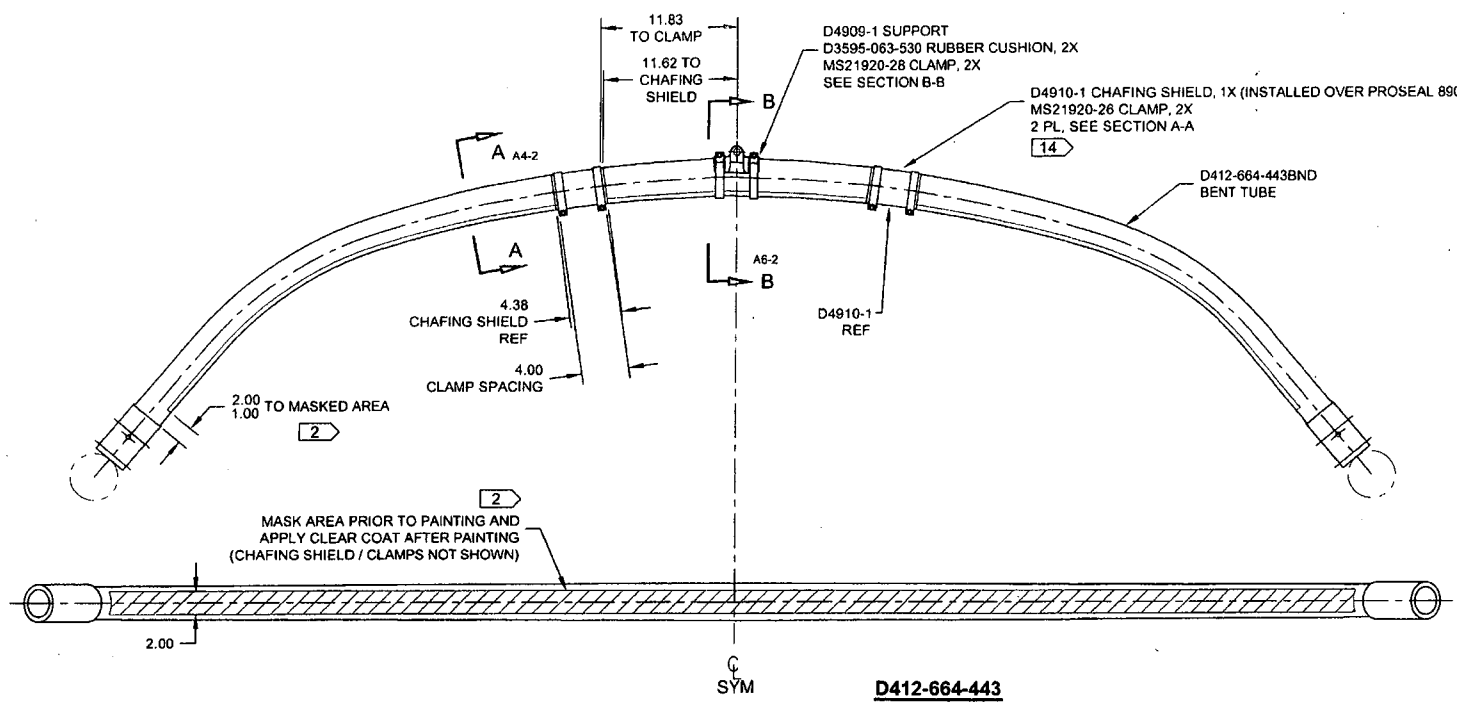
**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D412-664-443  
TITLE CROSSTUBE ASSY (412 HI AFT)

REV. A  
SHEET 1 OF 4  
SCALE NTS

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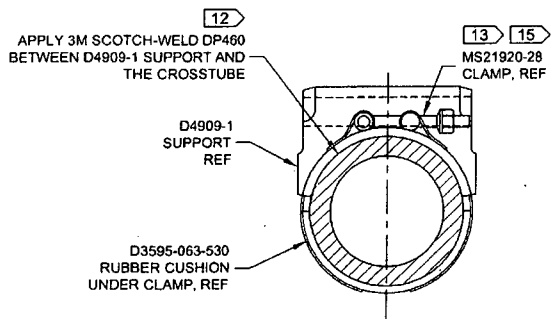




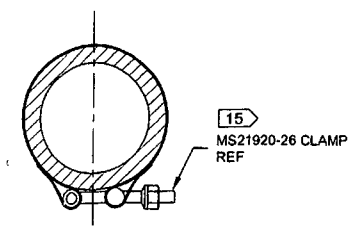
**D412-664-443**  
ASSEMBLY DETAIL

**UNDER REVIEW**  
OK 9/11/14 11/7/15 1/17

**RELEASED**  
2014-05-26  
WMD



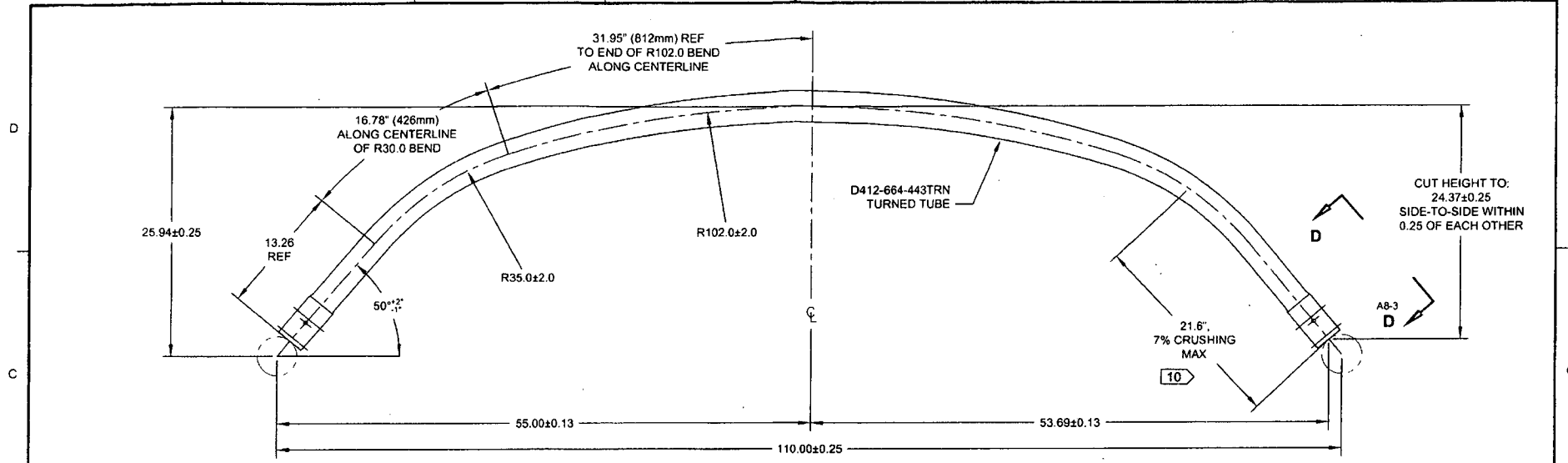
**SECTION B-B** D4-2  
SCALE 4X



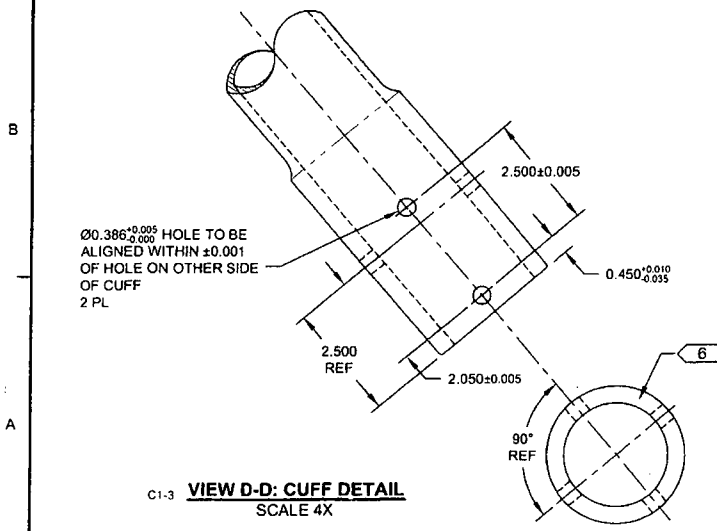
**SECTION A-A** C6-2  
SCALE 4X

|            |          |                                                                                                                                                                                                                                                                                  |              |
|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     | 97       | <b>DART AEROSPACE LTD</b>                                                                                                                                                                                                                                                        |              |
| DRAWN      | 97       | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                                                      |              |
| CHECKED    | De       | DRAWING NO.                                                                                                                                                                                                                                                                      | REV. A       |
| MFG. APPR. |          | D412-664-443                                                                                                                                                                                                                                                                     | SHEET 2 OF 4 |
| APPROVED   |          | TITLE                                                                                                                                                                                                                                                                            | SCALE        |
| DE APPR.   |          | CROSSTUBE ASSY (412 HI AFT)                                                                                                                                                                                                                                                      | NTS          |
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8 7 6 5 4 3 2 1



**D412-664-443BND**  
BENDING DETAIL

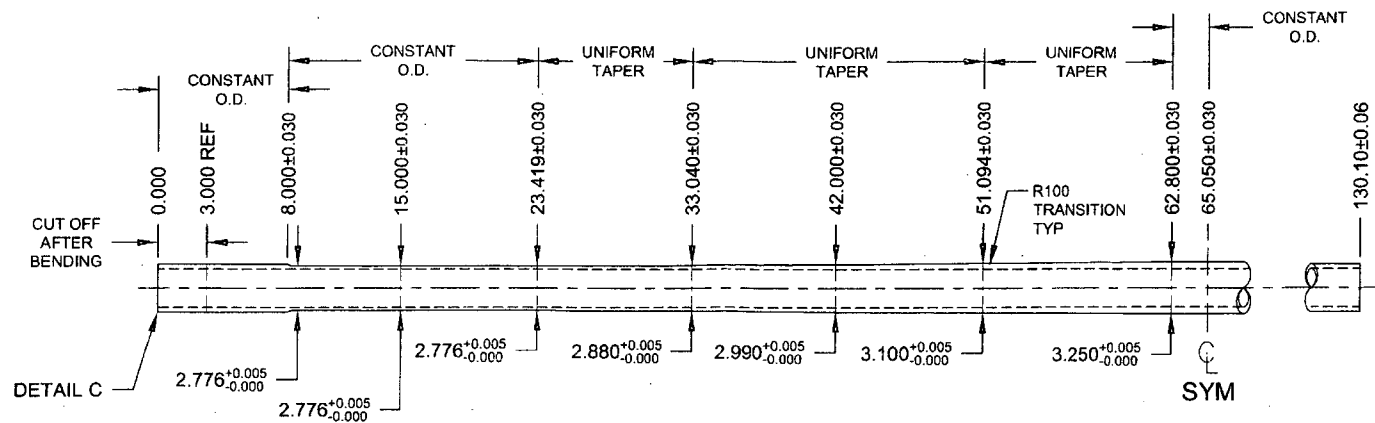


**VIEW D-D: CUFF DETAIL**  
SCALE 4X

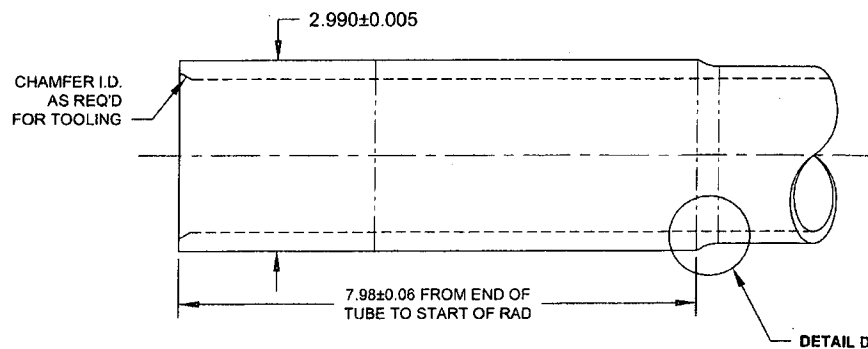
OK  
Pm/4/4  
**UNDER REVIEW**  
1/17/30  
**RELEASED**  
2014-05-26  
mnd

|            |          |                                                                                                                                                                                                                                                                  |              |
|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     | DP       | <b>DART AEROSPACE LTD</b>                                                                                                                                                                                                                                        |              |
| DRAWN      | DP       | HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                                      |              |
| CHECKED    | DLW      | DRAWING NO.                                                                                                                                                                                                                                                      | REV. A       |
| MFG. APPR. |          | D412-664-443                                                                                                                                                                                                                                                     | SHEET 3 OF 4 |
| APPROVED   |          | TITLE                                                                                                                                                                                                                                                            | SCALE        |
| DE APPR.   |          | CROSSTUBE ASSY (412 HI AFT)                                                                                                                                                                                                                                      | NTS          |
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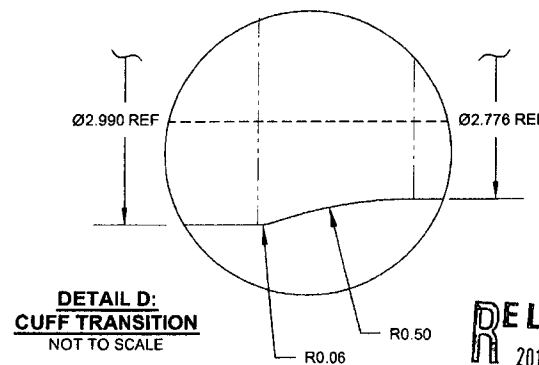
8 7 6 5 4 3 2 1



**D412-664-443TRN**  
**TURNING DETAIL**



**DETAIL C:**  
**CUFF TRANSITION**  
SCALE 4X



**DETAIL D:**  
**CUFF TRANSITION**  
NOT TO SCALE

OK *[Signature]*  
**UNDER REVIEW**

**RELEASED**  
2014-05-26

|                                                                                                                                                                                                                                 |                    |                                        |              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------|--------------|
| DESIGN                                                                                                                                                                                                                          | <i>[Signature]</i> | <b>DART AEROSPACE LTD</b>              |              |
| DRAWN                                                                                                                                                                                                                           | <i>[Signature]</i> | HAWKESBURY, ONTARIO, CANADA            |              |
| CHECKED                                                                                                                                                                                                                         | <i>[Signature]</i> | DRAWING NO.                            | REV. A       |
| MFG. APPR.                                                                                                                                                                                                                      | <i>[Signature]</i> | D412-664-443                           | SHEET 4 OF 4 |
| APPROVED                                                                                                                                                                                                                        | <i>[Signature]</i> | TITLE                                  | SCALE        |
| DE APPR.                                                                                                                                                                                                                        | <i>[Signature]</i> | CROSSTUBE ASSEMBLY (412 HI AFT)        | NTS          |
| DATE                                                                                                                                                                                                                            | 14.04.01           | COPYRIGHT © 2013 BY DART AEROSPACE LTD |              |
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## **Linda Lacelle**

---

**From:** David Shepherd  
**Sent:** April-02-15 2:01 PM  
**To:** Linda Lacelle; Chris Provencal  
**Cc:** Nigel Forbes  
**Subject:** Re: AOG\*\*\*NEW SO120870 HELISERVICIO SA DE CV - HOLLY

Completely agree with Chris on this. I think we need to do everything we can to make sure the tubes are well degrease before we start priming and painting the tubes.

David

---

**From:** Linda Lacelle  
**Sent:** Thursday, April 2, 2015 10:54 AM  
**To:** Chris Provencal  
**Cc:** David Shepherd; Nigel Forbes  
**Subject:** RE: AOG\*\*\*NEW SO120870 HELISERVICIO SA DE CV - HOLLY

OK, thx!

---

**From:** Chris Provencal  
**Sent:** April-02-15 1:50 PM  
**To:** Linda Lacelle  
**Cc:** David Shepherd; Nigel Forbes  
**Subject:** RE: AOG\*\*\*NEW SO120870 HELISERVICIO SA DE CV - HOLLY

We have no idea how the powder coat will perform. It would be much safer to paint them.

Chris

---

**From:** Linda Lacelle  
**Sent:** Thursday, April 02, 2015 12:30 PM  
**To:** Chris Provencal  
**Cc:** David Shepherd; Nigel Forbes

• **Subject:** FW: AOG\*\*\*NEW SO120870 HELISERVICIO SA DE CV - HOLLY

**Importance:** High

• We need to make 2 more for this order – D412-664-403 SS crosstubes, do we spray paint these also, or powdercoat???

Thx

Linda

---

**From:** Chantal Chartrand

**Sent:** April-02-15 12:04 PM

**To:** Sylvie Larocque; Brigitte Golden

**Cc:** Linda Lacelle; Mario Poulin; Melanie Fauteux; Sherri Van Eyk; Holly Menard

**Subject:** AOG\*\*\*NEW SO120870 HELISERVICIO SA DE CV - HOLLY

PLEASE FIND ATTACHED NEW SO \*\*\*AOG\*\*\*

**\*\*Use cost price on all doc and indicate customer's tax ID HEL120919QD0 in AWB\*\***

**Send Form 1/8130-3 in a different shipment to:**

HELISERVICIO SA DE CV

PASEO DE LA REFORMA 2654

PISO 19, COL. LOMAS ALTAS

DEL. JOSE MIGUEL HIDALGO,

DF, CP 11950

MEXICO

ATTN: ROSARIO MENESES

**AS SOON AS THE ORDER IS READY:**

AOG freight service

Christine Provencal

Air Export Agent

SDV Logistiques (Canada) Inc.

3333 Douglas B. Floreani

St-Laurent, Québec, Canada, H4S 1Y6

Tel. 514-338-4444 ext (3343) – Direct: 514-338-4719 - Fax: 514-956-0079

[c.provencal@sdv.ca](mailto:c.provencal@sdv.ca)

[aogsdvyul@sdv.ca](mailto:aogsdvyul@sdv.ca)

**D412-664-403 Stainless Steel Hardened Crosstube**

**setup**

3.25" rollers

Bend lines are @ 32", 35" from centerline of tube

1.75" shims are used in the buggy for side bends

**Middle Bend**

Middle bend goes from 35" line with crosstube being on the large table of the machine.

Approach for middle bend is 2870 on both rollers. Run programs middle1-6 check.

**Side Bends**

Run programs side 1-10 down the taper from 32" tangent line. Approach is 2900 on Y roller and 3385 on W roller. Programs 1-5 go back to the tangent line ready for next bend. Program 6-10 release at the end.

Approaches on programs 6-10 are on the first line of programs... Programs 11-15 run down taper for 9" then come back up to finish tube slowly, be careful with these programs...

Enjoy

3385/2900

**Notes:**

13/12/12 ran 1 tube, program middle 6 was not enough, prog middle 7 overbent slightly. will create middle 6b to be a halfway point. after program 7 we ran the tube as per folio. one side finished nicely at program 10, the opposite side finished nicely after running program 1 2 times, then 13 to finish. this left the tube closer to max tolerance on the span, 53.730/53.800.

|    |      |    |
|----|------|----|
| 1  | Auto | 1  |
| 2  | 6    | 2  |
| 3  | 6b   | 3  |
| 4  | 7    | 4  |
| 5  |      | 5  |
| 6  |      | 6  |
| 7  | (16) | 7  |
| 8  |      | 8  |
| 9  |      | 9  |
| 10 |      | 10 |
| 11 |      |    |

**DART**  
AEROSPACE

Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO28743**

Purchase Order Date 6/9/2015

PO Print Date 6/10/2015

Page Number 2 of 2

**Order From :**

VC-SKY001

SKYSERVICE  
6120 MIDFIELD ROAD  
MISSISSAUGA, ONTARIO L5P 1B1  
CANADA

**Ship To :** DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**Contact Name**

**Vendor Phone** 905-678-5636

**Ship To Contact**

**Ship To Phone**

**Ship Via:** Delivered

**Ship Acct:**

**Buyer**

Chantal Lavoie

**Customer POID**

**Customer Tax #**

10127-2607

**Terms**

Net 30

**Currency**

CAD

**FOB**

FCA - (Free Carrier)

|   |        |                           |                  |      |          |          |
|---|--------|---------------------------|------------------|------|----------|----------|
| 3 | 130091 | D412-664-203<br>CROSSTUBE | 6/10/2015        | 1.00 | \$270.00 | \$270.00 |
|   |        |                           | Yes<br>6/10/2015 |      |          |          |

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR  
LPI AS PER ASTM 1417 LEVEL 2

**Line Total:** \$270.00

|   |        |                           |                  |      |          |          |
|---|--------|---------------------------|------------------|------|----------|----------|
| 4 | 130092 | D412-664-403<br>CROSSTUBE | 6/10/2015        | 1.00 | \$270.00 | \$270.00 |
|   |        |                           | Yes<br>6/10/2015 |      |          |          |

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR  
LPI AS PER ASTM 1417 LEVEL 2

**Line Total:** \$270.00

**PO Total:** \$810.00

**Note:** Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit [www.dartaerospace.com](http://www.dartaerospace.com) for further explanation.

Change Nbr: 2

Change Date: 6/10/2015

# skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

|                |                               |               |                    |
|----------------|-------------------------------|---------------|--------------------|
| WO #: MWO24856 | Customer: Dart Aerospace Ltd. | Dept: NDT YUL | Reference: PO28743 |
| Descr:         | PN:                           | S/N:          | Qty: 1             |
| Make:          | Model:                        | Reg:          | A/C S/N:           |
| TSN:           | CSN:                          | TSO:          |                    |

|                   |             |
|-------------------|-------------|
| Task: UNSCHEDULED | Sequence: 1 |
|-------------------|-------------|

## Work Required:

CARRY OUT NDT ON THREE CROSSTUBES AS PER PO : PO28743

ITEM ID: D412-664-403 STAINLESS STEEL AFT CROSSTUBES ( HIGH )

- 1 - WORK ORDER ID#: 130091
- 2 - WORK ORDER ID#: 130090
- 3 - WORK ORDER ID#: 130092

*SP15-06-10-*

|                                                                                                                                                                                                |  |  |  |  |  |                   |                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|-------------------|-----------------------------------------------------------------------------------------------------------|
| Action Taken:                                                                                                                                                                                  |  |  |  |  |  | Date:             | Initial/Stamp:                                                                                            |
| LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE (ITEMS 1-3) AS PER ASTM1417M-13<br><br>NO CRACK FOUND<br><br>PEN : ZL-27A MWO5678 DEV : SKD-S2 MPO11715 CLEANER : SKC-S MPO13923 |  |  |  |  |  | <i>9 Jun 2015</i> | <br><i>[Signature]</i> |

| Description | Location | P/N | Qty | Batch | S/N Off | S/N On |
|-------------|----------|-----|-----|-------|---------|--------|
|             |          |     |     |       |         |        |
|             |          |     |     |       |         |        |
|             |          |     |     |       |         |        |
|             |          |     |     |       |         |        |
|             |          |     |     |       |         |        |
|             |          |     |     |       |         |        |
|             |          |     |     |       |         |        |

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

|                               |                                                                                                  |                         |
|-------------------------------|--------------------------------------------------------------------------------------------------|-------------------------|
| Signature: <i>[Signature]</i> | ACA/SCA<br> | Date: <i>9 Jun 2015</i> |
| Name: CHRISTIAN BRIEN         |                                                                                                  |                         |